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HEARING ON THE MONTREAL

PROTOCOL AND GLOBAL WARMING

Wednesday, May 23, 2007

House of Representatives,

Committee on Oversight and

Government Reform,

Washington, D.C.

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**Committee Hearings**

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The committee met, pursuant to call, at 10:00 a.m. in room 2154, Rayburn House Office Building, the Honorable Henry A. Waxman [chairman of the committee] presiding.

Present: Representatives Waxman, Clay, Watson, McCollum, Hodes, Sarbanes, Davis of Virginia, Mica, Platts, Issa, Foxx, Sali, and Jordan.

Staff Present: Phil Barnett, Staff Director and Chief Counsel; Kristin Amerling, General Counsel; Karen Lightfoot, Communications Director and Senior Policy Advisor; Greg Dotson, Chief Environmental Counsel; Jeff Baran, Counsel; Molly Gulland, Assistant Communications Director; Earley

Green, Chief Clerk; Teresa Coufal, Deputy Clerk; Caren Auchman, Press Assistant; Zhongrui ''JR'' Deng, Chief Information Officer; Leneal Scott, Information Systems Manager; Miriam Edelman, Staff Assistant; Kerry Gutknecht, Staff Assistant; David Marin, Minority Staff Director; Larry Halloran, Minority Deputy Staff Director; Jennifer Safavian, Minority Chief Counsel for Oversight and Investigations; Keith Ausbrook, Minority General Counsel; A. Brooke Bennett, Minority Counsel; Kristina Husar, Minority Professional Staff Member; Larry Brady, Minority Senior Investigator and Policy Advisor; Patrick Lyden, Minority Parliamentarian and Member Service Coordinator; Brian McNicoll, Minority Communications Director; Benjamin Chance, Minority Clerk.

Chairman WAXMAN. The meeting of the Committee will come to order.

Before we proceed with today's hearing, I want to note that we have a new member of the Committee with us today, Representative Jim Jordan from Ohio. Mr. Jordan served for over a decade in the Ohio State Legislature before his election to Congress last fall.

Mr. Jordan, I want to welcome you to the Committee and look forward to working with you.

Let me yield to Mr. Davis at this point to welcome our new member today.

Mr. DAVIS OF VIRGINIA. Thank you, Mr. Chairman.

I am pleased to have Jim Jordan as the newest member of our Committee. We look forward to his active participation in our hearings and markups, although he has a markup in another Committee as we speak, so he will get used to running back and forth. But his experience in the Ohio State Legislature is going to benefit the work we do here on oversight and government reform. He represents Ohio's 4th District. He understands the issues facing families in the heartland of America.

Welcome, Jim.

Chairman WAXMAN. Thank you. I want to ask unanimous consent that Mr. Jordan be assigned to serve as a member of the Subcommittee on Federal Workforce, Postal Service, and

the District of Columbia.

Without objection, that will be the order.

Mr. JORDAN. Thank you.

Chairman WAXMAN. Thank you. Welcome to you.

The purpose of today's hearing is to find out whether there are ways to use the world's most successful environmental treaty, the Montreal Protocol, to tackle one of the world's gravest threats, global warming.

The public is beginning to understand the dangers of global warming. There is a growing awareness that if the Nation and the world do not act, global warming could cause more floods, more droughts, more heat waves, stronger hurricanes, the extinction of 20 to 30 percent of the world's species, the spread of diseases like malaria, the loss of our coastlines.

But what few people realize is that there are simple, affordable steps that we can take now that can make a big difference. The risks are large, but the situation is far from hopeless. There are cost-effective options for tackling climate change, and we have the power to reduce the dangers of global warming if we choose to act.

At today's hearing we are going to learn of one step we could take that would make a huge impact at virtually no cost. Using the Montreal Protocol, we can eliminate the equivalent of one billion tons of carbon dioxide emissions.

That is an enormous amount of emissions. It is equal to roughly half of the total emissions reductions required under the Kyoto Protocol, yet the cost could be as low as 50 cents per ton, between just $500 million and $1.5 billion globally.

We can achieve half the global warming impact of Kyoto at a global cost of just $1 billion by taking one simple step: accelerating the phase-out of ozone-depleting hydrochlorofluorocarbons, or HCFCs. HCFCs are used in air conditioners and refrigerators. There are low-cost substitutes currently on the market, so banning HCFCs would be inexpensive. But because HCFCs are extraordinarily potent greenhouse gases, eliminating HCFCs would have the same impact on global warming as removing 20 million cars from the road.

The Montreal Protocol was negotiated 20 years ago in order to stop the depletion of the stratospheric ozone layer by human product chemicals such as chlorofluorocarbons and hydrochlorofluorocarbons. The treaty is widely recognized as a tremendous success when it comes to protecting the ozone layer.

As a result of the Montreal Protocol's legally binding controls on the production and consumption of ozone-depleting substances, global emissions of these gases has dropped to a small fraction of their 1990 levels. Although we still have a way to go, the ozone layer is on the path to recovery.

At the same time, the Montreal Protocol has helped protect the planet from global warming. Today we will hear about a scientific paper which finds that the Montreal Protocol has had the effect of delaying global warming impacts by seven to twelve years. This new analysis shows that the world would be a decade closer to catastrophic climate change without the Montreal Protocol.

A new round of negotiations over the Montreal Protocol is scheduled for September, yet few people are aware of the role this protocol has played in slowing down global warming, and virtually no one in Congress knows that by further strengthening the Montreal Protocol in the upcoming negotiations, we can make a major positive contribution to reducing emissions of greenhouse gases.

Global warming is an enormous challenge. To fight global warming we will need to increase energy efficiency. We will have to reduce emissions from transportation and electricity generation. We need to move away from the dirty technologies of the past and embrace new, clean technologies. But, as we will learn today, there are also simple steps with dramatic effects that we can take now if we are creative and listen to what scientists are saying.

I look forward to hearing the testimony of the witnesses and I thank them for being here.

[Prepared statement of Chairman Waxman follows:]

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Chairman WAXMAN. I want to recognize Mr. Davis for his opening statement.

Mr. DAVIS OF VIRGINIA. Thank you very much, Mr. Chairman, for holding today's hearing to consider the achievements and the opportunities for climate protection under the Montreal Protocol.

Climate change is a critically important issue, and as policy-makers it is our job to consider all sensible options to reduce the emission of greenhouse gases. I am motivated to learn more about what we can do to advance the debate with potential solutions, and I think this hearing can serve as an example of how we, as a Committee, can work together to rationally investigate the facts surrounding climate change, and at the same time seek agreement on the way forward.

I am beginning to agree with some of the European climate change scientists who object to the Hollywood-ization of this issue because it further politicizes the debate and it makes rational consensus building a little more difficult to achieve, but while hyperbole and partisan accusations are good for grabbing headlines, they are not as productive a component of the deliberative process as hearings like this, so I am grateful the Committee is pursuing this instructive line of inquiry today.

Further, I think that the Montreal Protocol, itself, can serve as a model for international agreement on environmental

issues. In the 1980s the United States was the world's leading producer of CFCs. Even so, the Reagan Administration took the lead in negotiating an international agreement to reduce the emissions of CFCs. Ultimately, the Senate unanimously approved the Montreal Protocol. President Reagan signed the treaty saying that, ''The protocol marks an important milestone for the future quality of the global environment and for the health and well-being of all peoples of the world.''

Since the Montreal Protocol was signed in 1987, the U.S. has achieved a 90 percent reduction in the production and consumption of ozone-depleting substances, thus ending the production and import of over 1.7 billion pounds per year of these chemicals. Between 1989 and 1995, global emissions of CFCs dropped 60 percent worldwide. The reduction in emissions has proved a measurable benefit to the global environment, and some studies have shown the depletion of the ozone layer may be slowing due to the international ban on CFCs.

Today the Bush Administration is involved in international negotiations over accelerating the phase-out of HCFCs, which could have strongly beneficial results for all of us, but we need facts. One of the reasons the Administration did not wish to testify this morning is they are still trying to quantify the benefits of the changes

attributable to the protocol. But I am grateful for our witnesses coming forward. I wish the Administration had come forward.

I look forward to hearing the testimony of today's witnesses. I hope they can help shed some light on the benefits emanating from the Montreal Protocol to both the ozone layer and the effort to reduce greenhouse gases.

Thank you.

[Prepared statement of Mr. Davis of Virginia follows:]

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Chairman WAXMAN. Without objection, all members will have an opportunity to insert an opening statement in the record.

I would like to now proceed to our witnesses. We have Dr. Guus Velders, who works at the Netherlands Environmental Assessment Agency as a Senior Scientist on Ozone Layer Depletion, Climate Change, and Air Quality. He was the lead author of the 1998 and 2006 World Meteorological Organization United Nations Environmental Program, Scientific Assessment of Ozone Depletion. He is also lead coordinating author of the Intergovernmental Panel on Climate Change Special Report on Ozone Layer Depletion and Climate Change. Dr. Velders is testifying in his individual capacity.

Mr. Allan Thornton is the Executive Director of the Environmental Investigation Agency, a nonprofit, nongovernmental organization that has extensive expertise on the Montreal Protocol. In 2006, EPA awarded the organization the Stratospheric Ozone Protection Award.

Dr. Mack McFarland is the Global Environmental Manager for DuPont's chemicals businesses. Before joining DuPont in 1983, he was an atmospheric scientist at the National Oceanic and Atmospheric Administration.

I want to thank you all for being here today. We look forward to your testimony.

It is the practice of this Committee that all witnesses

be sworn in, because it is the Oversight Committee, so I would like to ask you if you would please rise and raise your right hand.

[Witnesses sworn.]

Chairman WAXMAN. The record will indicate that each of the witnesses answered in the affirmative.

Dr. Velders, why don't we start with you.

STATEMENTS OF GUUS VELDERS, NETHERLANDS ENVIRONMENTAL ASSESSMENT AGENCY; ALLAN THORNTON, EXECUTIVE DIRECTOR, ENVIRONMENTAL INVESTIGATION AGENCY; MACK MC FARLAND, ENVIRONMENTAL FELLOW, DU PONT FLUOROPRODUCTS

STATEMENT OF GUUS VELDERS

Mr. VELDERS. Good morning, Chairman Waxman and members of the Committee. Thank you for giving me this opportunity to share the results of our research with you.

The 1987 Montreal Protocol restricting the production and use of ozone-depleting substances has helped to both reduce global warming and protect the ozone layer. Without its protocol, the amount of heat trapped due to ozone-depleting substances would be twice as much as it is today. The benefits to climate already achieved to date by the Montreal Protocol and its amendments, alone, greatly exceeds the current targets of the Kyoto Protocol. Potential future effects of a strengthened Montreal Protocol on climate are still significant and will decrease in the future. Future emission reductions of Kyoto gases will potentially have a much larger effect on climate.

CFCs and other ozone-depleting substances are now globally recognized as the main cause of the observed

depletion of the ozone layer. In 1974 Molina and Rowland provided an early warning when they first recognized the potential of CFCs to deplete stratospheric ozone. Concern was further heightened in 1985 by the discovery of the ozone hole over Antarctica. The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer formally recognized the significant threat of ozone-depleting substances to the ozone layer and provided a mechanism to reduce and phase out global production and use of these compounds.

As a consequence, the production, use, and emissions of the major ozone-depleting substances have decreased significantly. The concentrations in the atmosphere of these major ozone-depleting substances are also decreasing.

There is now emerging evidence that the ozone layer is currently starting to recover. Full recovery is not expected until the second half of this century. Future emissions of ozone-depleting and climate change may delay or accelerate the recovery of the ozone layer by several years.

Ozone-depleting also contribute to the radiative forcing of climate change. Their current contribution is about 20 percent of that of carbon dioxide. The Kyoto Protocol of 1987 [sic] is a treaty for reducing the emissions of CO2, the leading greenhouse ga, and five other gases. These gases do not deplete the ozone layer, but include hydrofluorocarbons, HFCs, which are produced as alternatives for ozone-depleting

substances. The substances that do deplete the ozone layer are not included in the United Nations Framework Convention of Climate Change, UNFCCC, and its Kyoto Protocol, because they were already covered by the Montreal Protocol.

The Montreal Protocol has helped both to protect the ozone layer and to reduce global warming. My research shows that, without reductions achieved under this protocol, the amount of heat trapped due to ozone-depleting substances may have been about twice as much as it is today. This is equivalent to a gain of about 10 years in reductions of CO2 emissions.

The climate change benefits which have already been achieved by the Montreal Protocol, alone, are, according to my research, five to six times greater than the current reduction targets for 2008-2012 of the Kyoto Protocol, assuming full compliance. It is estimated that the Montreal Protocol may have avoided emissions of about 11 billion tons of CO2-equivalent by 2010. However, these benefits attributed to the Montreal Protocol will decrease further and further as ozone-depleting substances are being phased out under the Montreal Protocol.

New measures under a strengthened Montreal Protocol can result in additional benefits for both the ozone layer and climate. The IPCC assessed the potential and cost-effectiveness of such measures. Removing CFCs present

in existing applications--that is refrigerators and foams, mainly--can reduce emissions by about 120 million tons of CO2 per year by 2015. An accelerated phase-out of the production of HCFCs in developed and developing countries could be achieved with instruments similar to those currently in the Montreal Protocol. This can additionally reduce emissions by about 340 million tons per year of CO2 by 2015, and potentially about 800 to 900 million tons by 2030.

These possible emission reductions would derive mainly from better containment in refrigeration and destruction of ozone-depleting substances present in existing refrigerators and foams. Detailed scientific and technology assessments could provide policy-makers with the information necessary to fine-tune an accelerated HCFC phase-out to allow specific uses of HCFCs. Examples are use of HCFCs as feedstock for fluoropolymers and in other applications where emissions are near zero or where overriding energy efficiency benefits exist and efficiency benefits are present.

Thus, plausible scenarios that could achieve reductions in CO2-equivalent emissions of ozone-depleting substances and alternative gases both exist and have been considered. These reductions are comparable to the reduction target of the first commitment period of the Kyoto Protocol, but relatively small compared to the current global CO2 emissions.

It is widely acknowledged that emission reductions

exceeding those laid down for the first commitment period of the Kyoto Protocol will be needed to achieve the UNFCCC objective, namely, stabilization of greenhouse gases concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. While emissions reductions under the Montreal Protocol have played an important role in the past, future amendments can still have additional benefits for climate, reductions of greenhouse gases not covered by the Montreal Protocol have a potentially much larger effect on climate.

In conclusion, I think the success of the Montreal Protocol is also important, for it shows the effectiveness of an international agreement.

Chairman Waxman, thank you.

[Prepared statement of Mr. Velders follows:]

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Chairman WAXMAN. Thank you very much, Dr. Velders.

Mr. Thornton, we would like to hear from you.

STATEMENT OF ALLAN THORNTON

Mr. THORNTON. Thank you, Mr. Chairman and distinguished members of the Committee, for the opportunity to address you today, and thank you very much for having this very important hearing.

The Environmental Investigation Agency is a nonprofit organization. We investigate environmental crime all over the world, and we promote practical solutions to remedy such issues. We work with government enforcement agencies on all continents around the world to promote compliance with the Montreal Protocol and other international environmental agreements.

The Montreal Protocol is aptly regarded as the world's most successful environmental agreement, having phased out about 95 percent of ozone-depleting substances in developed countries, and around 50 to 75 percent in developing countries.

Because many ozone-depleting chemicals are also potent greenhouse gases, the Montreal Protocol's successful phase-out of CFCs and other ozone-depleting substances has

also made it the world's most effective climate treaty. While it is true that the phase-out of CFCs has spared the atmosphere some billions of tons of greenhouse emissions, it also contains a cautionary tale of the consequences of not actively considering the impacts, particularly on the climate, of actions taken under the Ozone Layer Treaty.

In the early 1990s, HCFCs became the first generation of substitute chemicals for ozone-layer-destroying CFCs. It was recognized by the protocol that these chemicals had value as transitional substances to facilitate the prompt phase-out of CFCs; however, the exponential growth in the demand for refrigerant gases worldwide resulted in unchecked and extremely excessive production of HCFCs. HCFCs contribute significantly to global warming, and the Montreal Protocol has, thus, inadvertently created a new additional significant source of greenhouse gases.

The phase-out of HCFCs in developing countries is not due until 2040, and no caps will be required until 2015. With countries such as China and India set to potentially produce millions of tons of HCFCs over the next 10 to 20 years, and with the currently agreed Montreal Protocol phase-out decades off, this unhindered growth in HCFC production will severely undermine the international community's efforts to address climate change.

The good news is that, by accelerating the phase-out

schedule for HCFCs under the Montreal Protocol, the international community has a huge opportunity to make a significant contribution to the global effort to mitigate climate change.

An unprecedented nine parties to the Montreal Protocol, including the United States, have recognized this opportunity and recently submitted proposals to accelerate the HCFC phase-out. These proposals will be considered at the next meeting of the parties of the Montreal Protocol in September.

As the U.S. considers these proposals, we would like to take the opportunity to highlight what EIA feels are key elements of what any final decision should look like on accelerated HCFC phase-out.

First, any decision must include an earlier freeze date for the production of HCFCs. Many proposals are suggesting a freeze of 2010, but an earlier freeze date, such as 2007, would prevent additional excessive production of HCFCs by cutting off this very rapid growth in the production of these chemicals.

Secondly, proposals should contain additional reduction steps to lower the production and consumption of HCFCs. These additional reduction steps are important because they offer greater climate and ozone layer benefits and would provide measurable benchmarks and compliance targets.

Third, proposals must contain the commitment for

funding. A fully funded phase-out of HCFCs ensures continuity of resources for the protocol's multilateral fund, allowing the fund to complete its important and highly cost effective work in protecting the ozone layer and the global climate.

Fourth, proposals must ensure the widespread adoption of climate-friendly replacement for HCFCs. While ozone-layer-friendly substitutes exist for virtually all current uses of HCFCs, many of these gases are just as bad, if not worse, in terms of climate impact. Thus, in order to realize the full climate benefits offered by an accelerated phase-out, any decision to adjust the phase-out schedule must include provisions that favor the adoption of climate-friendly alternatives to HCFCs.

Finally, concerted action to improve cooperation between the ozone layer and climate treaties is vital to the continued success of an accelerated phase-out of HCFCs. Specifically, parties to those two treaties must act urgently to address the perverse incentive that exists for the production of HCFC-22, which has been created through the Kyoto Protocol's clean development mechanism.

Now, HFCs, an even more potent greenhouse gases, are produced as a byproduct in the manufacture of HCFCs, and the HFCs are falling under the clean development mechanism of the Kyoto Protocol. Currently, the clean development mechanism is committing billions of dollars to capture and destroy the

HFCs as they are produced as byproducts to HCFCs, even though there is no cap or commitment to cap HCFC production by the major producers, such as China and India.

While concerted international action to address the emissions of carbon dioxide is essential, we would be remiss, negligent even, not to seize upon all available opportunities to reduce the emission of greenhouse gases. The Montreal Protocol has a proven track record of success. With appropriate policy adjustments now, this landmark agreement has the potential to further deliver critical and cost effective climate protection in the near term.

On behalf of the Environmental Investigation Agency, I urge the U.S. Government to immediately and aggressively pursue an adjustment to the Montreal Protocol that includes measures to support the adoption of climate friendly alternatives to HCFCs in order to seize upon this historic opportunity to further mitigate climate change.

Thank you, Mr. Chairman.

[Prepared statement of Mr. Thornton follows:]

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Chairman WAXMAN. Thank you very much, Mr. Thornton.

Dr. McFarland?

STATEMENT OF MACK MCFARLAND

Mr. MCFARLAND. Good morning, Chairman Waxman, Mr. Davis, and members of the Committee. My name is Mack McFarland, and I am the Global Environmental Manager for DuPont's Fluorochemical Business. I appreciate this opportunity to speak with you regarding stratospheric ozone and climate protection. In my testimony I will discuss DuPont's experiences, our views of the effectiveness of the Montreal Protocol, and suggest ways in which the protocol can be enhanced, and, as focus shifts specifically to climate protection, how national implementation can be improved.

DuPont is a science-driven company with a commitment to safety, health, and environmental protection. We strive for sustainable growth that benefits our shareholders, the societies in which we operate, and the global environment. It was our vision of sustainable growth that led us to set aggressive, voluntary goals and reduce our global greenhouse gas emissions. It is also this vision that led us to co-found the U.S. Climate Action Partnership and call for U.S. leadership on reducing greenhouse gases emissions.

We believe that with a properly designed, mandatory program the power of the market can be harnessed to achieve environmentally effective and economically sustainable greenhouse gas emission reductions.

DuPont introduced the first fluorochemical refrigerant gases, chlorofluorocarbons, or CFCs, in the 1930s, as safer alternatives to the move dangerous refrigerants then in use, such as ammonia. In 1988, based on the emerging scientific consensus, we voluntarily committed to phase out CFCs. We also used our science capabilities to lead in the development of alternative products to meet the growing societal need for air conditioning and refrigeration. This experience with CFC ozone issue provided us with a keen understanding of the implication of environmental issues that are global in scope and decades to centuries in duration.

The Montreal Protocol is widely recognized as a model for addressing global environmental issues. Progress has been rapid. The actions under the protocol have led to significant reductions in the current and future risks of both ozone depletion and climate change, while allowing the market to bring forward safe, efficient, and cost-effective substitutes with lower or no ozone-depleting potential.

We would like to recognize the tremendous leadership that both the Department of State and the Environmental Protection Agency have shown in developing, implementing, and

improving the protocol.

We have continued to provide a broad range of non-ozone-depleting fluorochemicals to meet market needs. In February of 2006 we announced that we had identified low-global-warming-potential, non-ozone-depleting alternatives for automotive air conditioning, with leading candidates that have global warming potentials only about 3 percent that of current products. It is our intent to apply these non-ozone-depleting, low-global-warming-potential technologies to other applications, as well.

While the Montreal Protocol has been a clear success, we believe it can be improved. At the international level, we believe the phase-out schedule for HCFCs should be accelerated in developing countries, as the U.S. Government has proposed. We also believe that the U.S. and other developed countries can and should accelerate their phase-out schedule.

At the National level, we believe implementation can be enhanced through more reliance on market-based mechanism.

Looking forward to regimes for climate protection, we suggest two potential market-based regulatory approaches for improving stewardship of HFCs.

Congress could establish a cap based on carbon equivalency, specifically on HFCs placed on the market, as was done on ozone-depleting equivalency for CFCs, halons, and

HCFCs. This could be combined with appropriate market-based incentives for capture and destruction of the material at the end of its useful life.

Alternative, HFCs could be included in a broader cap on greenhouse gas emissions. In this case, carbon-equivalent allowances would be required to be surrendered to place these compounds on the market, and carbon-equivalent credits would be granted for their destruction, creating market incentives for improved stewardship.

In summary, the Montreal Protocol has been an unprecedented success, protecting both stratospheric ozone and the global climate system. That success could be enhanced through an acceleration of the current HCFC phase-out schedule in both developed and developing countries.

Domestically, increased use of market-based systems for the fluorochemical gases under any climate change legislation could create cost-effective market incentives for more effective stewardship.

Thank you for the opportunity to share our thoughts on this important subject with the Committee. I look forward to your questions.

[Prepared statement of Mr. McFarland follows:]

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Chairman WAXMAN. Thank you very much, Dr. McFarland.

I am going to start the questioning by indicating that the three of you in the 1980s up to 1990, when the Clean Air Act was adopted, one of the major issues in the legislation was the depletion of the ozone layer by CFCs and other manufactured chemicals. When we tried to tackle this problem, industry told us that it would cause severe economic and social disruption.

At a January, 1990, hearing, the Air Conditioning and Refrigeration Institute testified that it was certain that ''We will see shut-downs of refrigeration equipment in supermarkets, we will see shutdowns of chiller machines which cool our large office buildings, our hotels, and hospitals.'' That is a direct quote from their testimony.

But instead of listening to these predictions of doom from the industry, we listened to the scientists who said that the action was urgently needed if we are going to reverse the damage and stop further damage to the stratospheric ozone. We passed legislation to cut emissions of ozone-depleting chemicals in the United States by 90 percent, and, of course, the supermarkets and hospitals weren't first to close their doors. We also passed that legislation before the Montreal Protocol was agreed to, because we felt that we needed to be the leaders by doing action here at home that was necessary while we advanced an

international agreement.

Well, in a similar situation today with global warming, industry is telling us that controlling global warming pollution would be an economic disaster, but scientists tell us that we must act, that there are a variety of cost-effective steps that can be taken.

In fact, I believe that there are steps that we could take now that would make a big difference in slowing climate change and wouldn't break the economy, and one of these is the point that the three of you are making at this hearing, that is maximizing the potential of the Montreal Protocol to tackle global warming.

One class of ozone-depleting substances regulated by that protocol is HCFCs, and some HCFCs are also powerful greenhouse gases, in addition to affecting the ozone depletion.

Now, the protocol currently requires developed countries to phase out HCFCs by 2030 and developing countries to phase them out by 2040. Several countries, including the United States, have proposed speeding up the phase-out schedule in order to protect the ozone layer and climate.

Dr. Velders, your paper examined the potential climate benefits of an accelerated phase-out of HCFCs. If the phase-out were sped up and banks of existing ozone-depleting chemicals were addressed, what kind of drop in greenhouse gas

emissions would you expect?

Mr. VELDERS. Mr. Chairman, our study shows that, based on a mitigation scenario from IPC, which is based on potential cost-effective measures which can be taken now, that it can be reduction of about 800 or 900 million tons of CO2 equivalent emissions by 2015, emissions reductions per year. The potential after that is even larger. So those are significant reductions, and they will help both for the ozone layer and it will help climate change.

Chairman WAXMAN. How would that reduction in greenhouse gases, compared to the reductions required by the Kyoto Protocol?

Mr. VELDERS. The Kyoto Protocol requires reduction by 2008, 2012, compared to 1990, of about two giga-tons, so two billion tons. So this is about half, which can reach by what the Kyoto Protocol is.

Chairman WAXMAN. These are enormous emissions reductions. By accelerating the Montreal Protocol, we could get some climate benefits, as half of Kyoto, that is equivalent, I understand, to 20 million cars off the road. Is that your understanding, as well?

Mr. VELDERS. I haven't done the climate change.

Chairman WAXMAN. Mr. Thornton, have you heard any estimates of how much an accelerated phase-out would cost?

Mr. THORNTON. There have been some very rough ballpark

figures put out in the order under the Montreal Protocol in the order of about $500 million to $1.5 billion, but I think that is a very general figure, but it is also dependent on knowing exactly how much HCFC is being produced in China right now, which is having an explosive growth in HCFC production, substantially motivated by this perverse incentive under clean development mechanism for HFC--

Chairman WAXMAN. Would this be equivalent to $5 per ton of carbon dioxide? As I understand it, these emission reductions under the Montreal Protocol would be as cheap as 50 cents per ton. Mr. Thornton, would the United States have to pay the entire cost of an accelerated phase-out?

Mr. THORNTON. No. The way the Montreal Protocol works is that the U.S. contributes to the multilateral fund, and the other parties to it would also contribute. I believe the U.S. contribution is at the U.N. scale, which I think is in the order of 23 to 25 percent of that amount. But, Mr. Chairman, I just have to say that, in terms of protecting the climate, this is the best bang for the buck that can be found in the world today. This is the most cost effective, most efficient, most achievable program that can be done in the near term that doesn't have the same complexities as the sort of larger greenhouse gas emissions, so it is a can-do program that the international community could achieve and get done and have a huge victory over the next years.

Chairman WAXMAN. Thank you.

Mr. Davis?

Mr. DAVIS OF VIRGINIA. I am going to let Mr. Issa go first.

Mr. ISSA. Thank you. Thank you, Mr. Chairman.

Dr. Velders, I guess my first question would be: when Europeans come to us on Kyoto, we often say how settled is the science. Turning that around, when we go out to sell, particularly to Africa, South America, China, other developing nations, how settled is the science? How are we going to be viewed when we say, okay, we will move this up to 2020, maybe even 2018; we want you to move up to 10 years after us, particularly when you look at figures that say Kyoto was a fraud, Kyoto wasn't going to save as much, in many ways as moving this up would save, but we're arriving eight years after we walked away from Kyoto. How is that going to be received? And I am all for it, but how settled is the science?

Mr. VELDERS. I think the science, sir, on the ozone layer is well established. The report says no doubt that the CFCs are the main cause of the ozone depletion. Also, if you look at the force of the climate system, of the CFCs, and of the HCFCs in the affirmative gases, its force is well understood. So the force on the climate system is well known. The effects from the forcing temperature change and

wind pattern change to the climate change, there is more debate about that. That is more uncertain. But the forcing of the climate system, of the CFCs, and the affirmatives is similar to forcing of CO2.

Mr. ISSA. So, sort of reading that back to you, from a standpoint of ozone depletion and in closing the ozone hole, we will consider that settled science, but from the standpoint of, as I think you said, that by 2010 we will have avoided somewhere in the range of 10 to 12 billion tons of carbon dioxide equivalents, versus Kyoto targets by 2012, would have only avoided two billion. I am going to be in Berlin later this year meeting with our European partners again. It is a regular subject. Are they going to agree with these numbers? And how do I convince them, if they don't, that these numbers, that we need to push not just ourselves but the third world to meet new targets?

Mr. VELDERS. The number of the 10 to 12 billion tons avoided of emissions of course have been somewhat of a scenario issue, what would have happened without Montreal Protocol. We showed in our study 2 to 3 percent growth in the CFCs without the Montreal Protocol, which can be considered a rather conservative growth if you look at the growth figures which were in the 1970s and 1980s, which were much more than the 2 to 3 percent we considered.

So I think that number might not be 10 to 12, it could

be 8 or 9, but I think people will not question it. It is significantly larger than the Kyoto target.

Mr. ISSA. Very good.

Dr. McFarland, I guess I will come back to you with the same sort of point, particularly since the name DuPont usually represents breakthroughs in science, it also represents a little higher price. I am glad you smiled at that. What is the ballpark cost if we were to move up by 10 years? I am assuming at that point you can pretty well decide what all the alternatives are if, let's say, ten years from now we are going to be completely phased out. You pretty well know what is available. We are not talking about breakthrough science, so--well, we are talking some breakthroughs. What will be the cost? Particularly when we look at methylbromide, which is continuing to live on, one of the ozone-depleting substances that we are still using even in the U.S.?

Mr. MCFARLAND. Well, I don't have any figures better than what Mr. Thornton put out of half a billion to one-and-a-half billion. I can--

Mr. ISSA. Which is cheap. Let's be honest. When we look at other alternatives, there is nothing that is in those. We are looking at $350 trillion to get to a zero carbon footprint, so this is a rounding area to that.

Mr. MCFARLAND. It is a very cost-effective way to both

protect climate and ozone. In more general terms, accelerating a phase-out to some extent in the developed world, and specifically in the U.S., shouldn't cost anything or be very cost effective because the existing laws on the books already are phasing out the equipment made with HCFCs in a couple of years.

For developing countries it is a very different situation than we faced during the CFC phase-out. When the CFC phase-out was started we didn't have the alternatives, we didn't know what they were, they weren't deployed. Now the alternatives to HCFCs exist. They exist in the developing world and, in fact, major developing countries like China are actually producing goods with the alternatives that are being sold in the United States, Europe, and Japan. So it is a very different situation, and the new equipment that is being made with these alternatives is more efficient, so there are benefits of moving away from HCFCs and into alternatives, so it should be a very cost-effective move.

Mr. ISSA. Thank you. Ten more questions, no more time. Thank you, Mr. Chairman.

Chairman WAXMAN. Thank you very much.

Ms. McCollum?

Ms. MCCOLLUM. Thank you, Mr. Chairman. Thank you, gentlemen.

So a problem is identified in the ozone layer. Action

was taken. We had 191 countries join together in the Kyoto Protocol. Average Americans understood that there was a problem and that there was action to be taken, and that they wanted to be part of protecting the ozone layer. People who sold the products for the most part, they understood there was a problem. They wanted to know what they could do in making people be aware and have confidence in the new products that were coming online, refrigerators and air conditioners and that, although the industry did fight it.

The ozone layer has been protected from getting much larger, but really has not gotten smaller, so the success is there was a problem, it was identified, people came together, they did something about it, and what we have done is we have just stayed somewhat neutral in our battle against the ozone hole becoming larger.

So now we know that there is a problem with the chemicals that we are currently using, and we have to do something about that, but what I am hearing with the discussion going on down there is a couple of different things.

One, Mr. McFarland, DuPont has something that can come online. You are working very hard on it. I commend DuPont for doing that, but the problem in the developing countries, I want to go back to a little bit about what I am thinking I am hearing what is going on in the developing countries.

Are we still having a black market in which the banned chemical is being used? And if we don't address the CFCs and the black market that is going on there, what prevents us from being able to address a black market with the HCFCs, because if we don't address that and figure a way in which to make a black market not profitable, we will never get to the point where we want to with fully protecting and decreasing the hole in the ozone layer.

If you gentlemen could kind of, from your perspectives, say what we can do together to stop black markets from occurring.

Mr. THORNTON. Thank you. EIA has done extensive work on legal trade in CFCs and halons and have worked in close cooperation with the National CFC Task Force here in the U.S., which is chaired by the Environmental Crimes Unit of the Justice Department and includes all the other main agencies working on this issue. There has been substantial improvement both in the United States and worldwide on significant reduction on illegal CFC trade due to identification of the problem areas; additional restrictions, both in the U.S. and Europe and in other countries, to respond to that; and the substantive increase in capacity building and training of enforcement authorities all over the world. My organization has taken part in about 20 regional training seminars, even to the point where Chinese Customs

uses EIA's video on how to detect illegal CFC smuggling to train their own Customs personnel. So that has been a very big success.

In terms of how to prevent it from happening with HCFCs, bringing forward the phase-out, stepping up the phase-out, and adding these reduction steps would be a very positive measure because it does give a monitorable and achievable goal and benchmarks that we can ascertain compliance, and it doesn't have a very big production at the end of the period of when they should stop to bring to a very rapid halt so that it is being stepped down and phased down over time, and it would allow the international community to better monitor and to detect any diversion of illicit material.

That said, there are certainly indications and some evidence already that there is an illegal trade in HCFCs even coming into the United States. China does have an explosive growth in HCFCs occurring now, and much of that is coming back into the United States. There are six or seven million air conditioning units being brought into the U.S.

Chairman WAXMAN. Thank you.

Mr. Davis?

Mr. DAVIS OF VIRGINIA. We have recently requested that the GAO conduct a study of the emissions offset programs because the companies that sell carbon offsets to U.S. consumers operate under virtually no standards. Furthermore,

there are numerous efforts by States and the Federal Government to be carbon neutral, in part by purchasing these offsets.

Now, your testimony today regarding China's attempt to gain the system by emitting unchecked and excessive production of HCFCs in order to receive credits under the Kyoto Protocols certified emission reduction credit system is disturbing. Does this manipulation of carbon credits by China impact the system of carbon credits that is currently so in vogue?

Mr. THORNTON. Well, the clean development mechanism is a work in progress, and it is just starting now. From EIA's point of view the whole situation and system would be a lot better if the United States was in there contributing to it, because the U.S. has enormous technical resources and expertise to help make the system work better. So some of these big projects are just getting up and running, but there is a significant commitment to take out HFC production, which is the chemical that produces the by-product--

Mr. DAVIS OF VIRGINIA. I have got a follow-up, but let me ask Dr. McFarland, do you want to comment on that?

Mr. MCFARLAND. Yes. I would like to separate two things. One is under the current clean development mechanism, projects, HCFC-22 plants that were in operation as of January 1, 2001, are allowed to participate under CDM.

The current debate is about HCFC-22 plants that have come online since then. There is a significant issue there. Because of the value of those carbon credits, it is possible that the HFC-23 destruction CDM project could become the product and the HCFC-22 could become the by-product, because the 23 credits would be worth more than the 22 production.

So there is a significant issue there, and it is currently being debated under the framework convention on climate change and how to manage it there, but it is also here is the opportunity under the Montreal Protocol to begin to deal with the issue by accelerating the phase-out of HCFCs in developing countries.

Mr. DAVIS OF VIRGINIA. But don't you think then--I mean, Mr. Thornton said it is in its infancy in terms of understanding it--that Congress should continue to conduct more oversight into these carbon trading markets and get a better understanding?

Mr. THORNTON. I think the system could definitely be more robust. again, we very much welcome the U.S. input to it and we think there are achievable solutions that could address the HFC issue in the clean development mechanism, for instance, by requiring a freeze on HCFC production for any country that is receiving HFC projects from CDM would be a simple way to further reinforce or freeze the HCFC production.

Mr. DAVIS OF VIRGINIA. All right. I will yield to Mr. Issa.

Mr. ISSA. Thank you, Mr. Davis.

I would like to ask unanimous consent to have Greener Computing placed in the record as a part of this question.

Chairman WAXMAN. Without objection.

[The information follows:]

********** COMMITTEE INSERT **********

Mr. ISSA. Mr. Thornton, let me understand this correctly. China is, in fact, gaming the system today as we speak by producing harmful HCFC-22 for the sole reason of destroying HCF-23 by-product, and we are allowing it to go on and, in fact, the Department of Justice should be investigating this and taking action. We should be, in fact, placing moratoriums on by-product imports so that we are not, in fact, providing the dollars for the very activity that we object to. Isn't that really the case, that we are giving China a pass today? It is like watching something, like watching a house be robbed and saying we need a stronger police force, isn't it?

Mr. THORNTON. Well, there is no law being broken, and that is the problem, because there is a disconnect between the Montreal Protocol regulating HCFC and the Kyoto regulating HFC, and what we are trying to do is to marry the two policies of the two treaties together to fast-track HCFC phase-out, at the same time cap, reduce, and stop the HFC.

Mr. ISSA. Well, I appreciate that, but I come from a State where right now we are about to stop bringing in coal-fired-produced electricity because we finally woke up and said we won't allow coal fire in California, but we're willing to energy launder or greenhouse launder or whatever you want to call it in California. California has taken the response. Shouldn't this Oversight Committee and this

Congress take steps to stop the importation and financial gain of by-products which are, in fact, damaging our environment, something we could do today by not providing the avenue for those tens of millions of refrigerators and other items made, in fact, in a way that we would not allow them to be done under our protocol?

Mr. THORNTON. Yes. We think it would be a very good thing if the U.S. would stop import of equipment with HCFC in them, because the U.S. is a huge market and that would send a huge signal to the market and would have a very positive, very beneficial effect, with almost immediate impact.

Mr. ISSA. Mr. Chairman, although we don't have WTO experts here, I would appreciate it if we could look into it as a Committee of whether or not we could do that without violating the WTO rules. Thank you. I yield back.

Chairman WAXMAN. Thank you very much. That is an excellent question. Let's see if we can get an answer to it.

Mr. Hodes?

Mr. HODES. Thank you, Mr. Chairman.

I want to thank the witnesses for appearing.

One question that I had when reading the written testimony of Dr. Velders and Mr. Thornton was the following: Dr. Velders, you wrote, ''there is emerging evidence that the ozone layer is currently starting to recover. Full recovery is expected around 2050 to 2075.'' Mr. Thornton, you wrote,

''While significant progress has been made to reduce the atmospheric concentration of ozone-layer-destroying chemicals, there is no definitive evidence demonstrating that the ozone layer has started to recover.'' Would you gentlemen explain to me whether there is a disagreement over whether or not the ozone layer has, in fact, started to recover, and, if so, how might that be resolved?

Mr. VELDERS. I don't think there is that much disagreement. In the last ozone assessment in June we talked a lot about what is recovery. What do you mean recovery? Do you want to have the situation back as it was before, let's say, the 1960s? Or do you want to see it not getting worse any more? What we now see, it is not getting worse any more, so we say, well, there are signals that it is not getting worse. And the theory says, well, in about 50 years or a bit more we should have a recovered ozone layer, so it is the start of the ozone getting better. I think that is what it is. We are not there yet. It will take at least another 50 years, and there are factors which could influence that. But it is not getting worse, so we can say it is the onset of recovery.

Mr. HODES. Do you agree, Mr. Thornton?

Mr. THORNTON. We concur with the scientific assessment. There are many other factors that come into play on this. For instance, President Reagan agreed on a phase-out schedule

for methylbromide that should have ended two years ago production and use in the U.S., and yet the U.S. is still producing and using millions of pounds of methylbromide, which is undercutting the alternative markets worldwide in developing countries that have already bitten the bullet and done that.

So there are all these other impacts that go along with, like, not full compliance with the requirements of Montreal Protocol. So there are other things that are causing unanticipated impacts because of there not being full compliance.

Mr. HODES. I want to follow up on some of the questions about the perverse incentives to produce the HCFC-22 in order to gain the carbon trading credits of the HFC-23. What impact does the failure of the United States to be part of the Kyoto Protocol have on our ability to deal with this problem?

Mr. THORNTON. Well, from the point of view of the Environmental Investigation Agency, I mean, the U.S. has always been a leader in Montreal Protocol. It has had a historical leadership. It has been bipartisan. It is the biggest economy in the world. It is the most influential economy in the world. Not having the U.S. in Kyoto means that the U.S.'s vase experience, resources, and economic influence isn't being brought to bear, say, in the clean

development mechanism, where you could have a huge impact fairly immediately. We think there is very forward-looking policy analysis occurring within different departments, and I think a huge contribution could and should be made. So, of course, we would like to see the U.S. in Kyoto. Whether it is not perfect or not, it would be a lot better if the U.S. was in there participating and inputting.

Mr. HODES. So that, while we have an opportunity to solve the problem under the Montreal Protocol, in terms of accelerating the elimination of HCFC-22, if we were part of Kyoto we would have much more ability to deal with the issue of this perverse incentive?

Mr. THORNTON. Yes.

Mr. HODES. Given that we are not in Kyoto, is there anything else that can be done in addition to the elimination of the HCFC-22 under Kyoto? Should we push somehow for HFC-23 to be removed from the carbon trading scheme?

Mr. THORNTON. I think that is a rather complex question which I would be happy to follow up in a written response, but, as imperfect as the scheme might be now, this is starting to build something that--I mean, clearly it is better that the HFC is not going in the atmosphere. Clearly, it would be preferable for the international community not to have to spend billions of dollars to achieve that when we could spend a lot less in Montreal Protocol to achieve a

phase-out. Clearly, a clean development mechanism should require a cap on HCFC production of any country that is receiving HFC phase-out funding. So there are things that could be done.

And certainly we would very much like to see the U.S. stop imports of air conditioners and other equipment from China, et cetera, with HCFCs because it is a huge market and it is a huge contributing factor.

Mr. HODES. Thank you.

Chairman WAXMAN. Dr. McFarland, you wanted to add something to that?

Mr. MCFARLAND. Yes. A couple of things I may like to clarify that I possibly didn't in my written or oral testimony. One is that the issue is around HCFC-22 plants that have started up since January 1, 2001, and it is these new plants, and currently they are not allowed, under the clean development mechanism, and there is a significant debate under the Kyoto Protocol and the Framework Convention as to whether they should. The question is, how do you manage that going forward? To my knowledge, that is strictly an issue of China, because I know of no plants outside of China that have begun an operation since January 1, 2001.

The second issue about this, whether WTO rules, you would violate WTO rules by banning the import, Europe is already banning the import of equipment containing HCFCs, so,

I mean, if it doesn't violate there it shouldn't here, either.

Chairman WAXMAN. That is a very good point.

In September there is going to be a meeting to mark the 20th anniversary of the Montreal Protocol and they will discuss a number of ideas to modify the treaty in order to accelerate the phase-out of HCFCs. I would like to ask this panel about the proposals from the United States, which has four elements.

First, the Administration has proposed moving up the HCFC phase-out dates by ten years for both developed and developing countries. Do you think this is a good idea from a global warming perspective? Dr. Velders?

Mr. VELDERS. Yes. I think if you forward the date of the total phase-out it will avoid additional emissions, especially after 2030, in developing countries, and it will be both the ozone layer and for climate change beneficial.

Chairman WAXMAN. Do you agree with that, Dr. McFarland and Mr. Thornton?

Mr. MCFARLAND. Yes.

Mr. THORNTON. EIA would recommend a more aggressive phase-out because we think it could be brought forward to 2007, or very soon thereafter. We don't think we should have to wait until 2010, as is said in the U.S. proposal, because the current HCFC production in China is very big and growing

very quickly.

Chairman WAXMAN. You would support the U.S. proposal, but you would go further than the U.S. proposal?

Mr. THORNTON. Yes.

Chairman WAXMAN. Okay. The United States has proposed adding intermediate HCFC phase-out steps for developing countries. Would this change to the Montreal Protocol also be beneficial? Dr. Velders?

Mr. VELDERS. Yes. I think the intermediate steps are more important even than the base year, because they really bring down the future production. I have estimated, based on the total scheme for the U.S. proposal, by around 2030 it can avoid 600 to 700 million tons per year of CO2 equivalents of greenhouse gases.

Chairman WAXMAN. Do you both agree, Dr. McFarland and Mr. Thornton?

Mr. MCFARLAND. And additionally it makes economic sense, because if you have a sudden drop to zero you have got a lot of equipment out there that you have got to service, so it makes both sense from the environmental and the economic standpoint.

Chairman WAXMAN. Thirdly, the Administration has suggested setting an earlier baseline date of 2010 instead of 2015 for developing countries. This is a fairly technical change, Can any of you explain what impact this would have

on greenhouse gas emissions?

Mr. VELDERS. If you set out a cap, like now is 2015, set a new cap for next 25 years, we don't know what will happen until 2015, like strong economic growth now in China and India is likely to increase. So bringing that date forward will reduce that cap and will affect a whole period of the future emissions and production. It will definitely have beneficial for both again ozone layer and climate.

Chairman WAXMAN. And, finally, the United States has proposed phasing out the worst ozone-depleting chemicals first. Do you all support that approach?

Mr. THORNTON. Yes, Mr. Chairman. Could I also just say to the last point that EIA also favors bringing the baseline forward, because if we wait until 2010 for Article 5, again, talking about China, we just have more explosive growth for the next three years, and probably they will rush to expand it so that the base will be at a very high level. We should get in as quick as possible to get that base set as soon as possible at the lowest possible level because, again, we will just be buying greater protection for the climate by having capped HCFC production at a lower level. So time is of the essence.

Chairman WAXMAN. Yes.

Let me ask this panel this question. Modifying the Montreal Protocol to speed up the phase-out of HCFCs wouldn't

solve the global warming problem. We will need to do much more. I assume you all agree with that statement?

Mr. VELDERS. Yes.

Mr. THORNTON. Yes.

Mr. MCFARLAND. Yes.

Chairman WAXMAN. You all believe that speeding up the phase-out of HCFCs is an important step that is worth taking if we want to seriously address global warming, so there is a lot of work to be done and, even if we don't do anything else, we will at least have made an important accomplishment if we speed up this reduction of HCFCs.

Mr. VELDERS. Yes.

Mr. THORNTON. Yes.

Mr. MCFARLAND. Yes.

Chairman WAXMAN. Mr. Issa?

Mr. DAVIS OF VIRGINIA. I will yield my five minutes to Mr. Issa.

Mr. ISSA. Thank you, Mr. Davis, and thank you, Mr. Chairman.

Mr. Thornton, can you name some of the companies that are essentially pollution laundering by producing in China these air conditioners and refrigerators?

Mr. THORNTON. There are quite a number of companies. I would have to go back and check our notes. I would be happy to follow up with you and write to you following this

hearing.

Mr. ISSA. Well, isn't it true that many of them are household word names that previously manufactured in countries where they would not have been able to produce this refrigerant? I am thinking of countries like America and Japan.

Mr. THORNTON. They are primarily Chinese companies.

Mr. ISSA. They are primarily Chinese companies?

Mr. THORNTON. Yes.

Mr. ISSA. And under what trade names, though? Under Chinese trade names?

Mr. THORNTON. They will come in under a wide variety of names, either Chinese names, or they could be produced for many other companies.

Mr. ISSA. Let me maybe give you some names in order for full disclosure. Sanyo, Panasonic, General Electric--these are names that they may be coming in under, plus some of well-known air conditioning names, wouldn't it be?

Mr. THORNTON. I am sorry? Are you talking about the actual air conditioning units?

Mr. ISSA. Air conditioners and refrigerators, yes.

Mr. THORNTON. Well, in the air conditioning you can go out to any WalMart, Sears, or anywhere and they're all stacked up and everything is made in China, so there are extensive household names.

Mr. ISSA. So I think full disclosure for us in the American audience, what we are doing is taking products previously made in America under agreements in which we would not be producing them the way they are producing them in China, we have shifted off-shore the production, but we have also shifted off-shore the pollution around the very agreements we signed. Isn't that a fair statement?

Mr. THORNTON. That is generally correct.

Mr. ISSA. Because at the time of the signing, these products were in much greater numbers made in America, along with the refrigerant. Dr. McFarland, pretty well correct?

Mr. MCFARLAND. Yes.

Mr. ISSA. I wanted those head shaking, because it is important for people to understand that in an effort to be a good steward of the environment we have to look to countries like China that, in fact, we have shifted our pollution to, and, in full disclosure, India, Brazil, also the case. The Europeans, would it be fair to say that they have gone to Africa in the case of some of theirs, like their growing of orchids and flowers, things we are not talking about as much today. I will take that as a yes.

Chairman WAXMAN. Is that an affirmative answer to his statement?

Mr. THORNTON. I am sorry. I don't know about the orchids and flowers. I am not knowledgeable.

Mr. ISSA. As a strawberry producing State, California, we look at lot at where the methylbromide was used, and what we found is each of us moved it to countries outside of the protocol.

It is not good to give answers when you are up here. I should give questions only.

This will be my exit question, because it is an area of frustration. If China is cheating, call it whatever you want, and Brazil and India perhaps, not being mentioned as much today but major industrial producers, if they are cheating today and we need to bring them under the Montreal Protocol sooner and the Kyoto agreement, if it is to be effective worldwide, how do you best recommend that we come up with a strategy to stop cheating? You have given us one, which is stop importing products that essentially are laundering of these items which we could not produce here any longer, and I think that is an extremely good one, even though I am a free trader and it sounds protectionist. We are only talking about the pollution.

What other steps can we take to ensure that, for example, China--and I will just give you the best example. You mentioned the higher base level. They are producing, about every eight days, a new coal-fired power generation plant. they are producing them with technology that is several generations older than anything being used in the

United States, so they are, in fact, accelerating pollution faster than we are cleaning up. How do we, in fact, stop that behavior in the best way, in your opinion?

Mr. THORNTON. Well, in terms of this particular issue with the HCFCs and HFCs, clearly better cooperation between the two treaties would yield huge improvements. In terms of HCFCs, we generally support the direction the Administration is going in, but, again, we think there should be a more aggressive target, because those targets will, in effect, apply controls under the internationally agreed convention to China, and China will be bound to comply with them. There are substantive compliance mechanisms available to achieve that.

Mr. ISSA. Last, but not--

Mr. THORNTON. Organizations like ourselves as well.

Mr. ISSA. I have used up the time once again. Thank you, Mr. Chairman.

Chairman WAXMAN. Thank you very much.

Ms. McCollum? Well, Mr. Clay hasn't had his first round of questions, so I will let him go first.

Mr. CLAY. I thank you, Mr. Chairman, and I thank the panel for being here today.

One question that I don't think has been asked is, gentlemen, 12 States have acted to regulate greenhouse gas emissions from automobiles. Earlier this week a new report

by the U.S. Public Interest Research Group found that these tailpipe standards would reduce carbon dioxide emissions by nearly 400 million tons by 2020. That is a major reduction and a major achievement, yet those emissions reductions could be negated by the chemicals out there right now in refrigerators and air conditioners. These banks of CFCs and HCFCs are a serious threat to our climate, aren't they, and clearly we need to address this looming problem.

I would like to ask each of the panelists, what are your recommendations for dealing with the threat posed by banks of ozone-depleting substances? Dr. Velders, we will start with you.

Mr. VELDERS. Yes, you raise a very good point. The banks of CFCs currently in existing applications like refrigerators, but also in foams, the CFCs in there, they will, if you don't do anything, will get out into the atmosphere, and especially in refrigeration it will take about ten years and in foams it will take much longer. But especially in refrigeration the sooner you can take some action to recollect the CFCs in refrigerators, mobile and stationary, and destroy them so that they don't get into the atmosphere, the sooner the better, because in five years time about half of it will be out in the atmosphere. The faster the action on the banks, the better, both for the ozone layer and for climate.

Where you should take those actions, there are no provisions in the Montreal Protocol to do this, but there might be other incentives that you can facilitate.

Mr. CLAY. Thank you.

Mr. THORNTON. The Environmental Investigation Agency thinks we should address the banks with better economic incentives to remove them. It won't be easy. It will be difficult. However, we believe the greatest lesson we can learn from the history of banks is to stop the banks from getting bigger. Because, again, every day that passes, every month, every year, there are millions of air conditioners being imported into the United States from China, each with a few kilos of HCFCs, and they are going to have to be addressed.

Because if eventually all those millions of units and all that HCFC is lost into the atmosphere, there is just a kind of time bomb waiting to happen, and to further have a negative impact on the climate. So that is why we have stressed with the U.S. proposal to the Montreal Protocol to be more aggressive at bringing the phase-out dates forward to set the cap as early as 2007 to prevent future growth in HCFC and the expansion of this industry.

Mr. CLAY. And I guess simultaneously we should also be addressing the smokestack issue also, the emission from the smokestack, or do you think that would negate it, too? Even

if we reduce tailpipe emission, will the smokestack offset?

Mr. THORNTON. For me personally, Congressman, yes, I believe we should be doing all that we can wherever the carbon emissions are coming from, whether they are smokestacks, tail pipes, or from staying in the shower too long in the morning, but we all have to do our little bit to reduce our carbon footprints.

Mr. CLAY. Thank you. Dr. McFarland, please?

Mr. MCFARLAND. Congressman, you bring up a very good point. The CFCs and halons have been phased out of production and consumption in the United States, and if we don't act soon it is going to be an opportunity lost, because these things are continuously being emitted in the atmosphere.

The Montreal Protocol was a protocol that limited the amount that could be put into this equipment and on the market. It did not control the end of life us of the compounds. So it is probably too late to control them under an ozone regime; however, there may be an opportunity under a climate regime, because they are significant greenhouse gases. You might be able to allow some sort of a carbon credit for their capture and destruction and provide the financial incentive to get them out of the atmosphere, but every day we wait that one-time opportunity of destroying these things gets smaller and smaller.

Mr. CLAY. And let me real quickly ask how important is it for the Montreal Protocol to explicitly recognize the dual aims of protecting the ozone layer and combatting global warming? Anyone on the panel can venture.

Mr. THORNTON. Well, we believe that it is very important. In the past the Montreal Protocol has not taken sufficient account of the climate impacts of ozone-layer-depleting chemicals. We believe that this should be the basis of policy decisions in the future based on the scientific experience and evidence we have, and so we agree that the protocol should make its decisions fully cognizant of the impact of the climate emissions or carbon emissions, CO2 equivalent emissions from these greenhouse gases that are also ozone depleters.

Mr. CLAY. Thank you for your responses.

Mr. Chairman, I yield back. Thank you.

Chairman WAXMAN. Thank you very much, Mr. Clay.

Ms. McCollum, do you wish to ask further questions?

Ms. MCCOLLUM. I just want to kind of follow up. We have talked about the loophole that China has and the concerns about the black market, the role of Kyoto and Montreal in making for a healthier climate. Mr. Clay was talking about capturing the chemicals that are out there. But maybe we could hear a little more, especially from you, Mr. McFarland, about the alternatives that are out there for the HCFCs

today, the cost of shifting to those alternatives, because 20 years ago, quite frankly, people screamed the sky was falling on industry if we did anything, and we found out quite the opposite. We survived and we stayed neutral with the ozone hole getting much larger. We have seen it get a little larger in 2005, but for the most part we stayed steady.

We need to improve. We need to raise up the standard from just staying neutral to moving forward. What kind of role do you see out there with industries such as DuPont who are working very much through research to do something about this?

Mr. MCFARLAND. Well, for the phase-out of HCFCs, alternatives exist today. You can buy the products with alternative compounds. They are on the market. The clock is ticking until the phase-out, for example, of HCFC-22 equipment that can be produced in the United States will be illegal. As of January 1, 2010, according to the laws that are on the books today. it will be illegal to use newly produced 22 in equipment produced after 1/1/2010. Mr. Thornton has raised the issue of right now there is no law on the books that would prohibit the import of equipment containing 22, and that is something that needs to be worked on to close that so that it is a competitive issue for U.S. industry as well as an environmental issue.

So for the phase-out of HCFCs, the compounds exist

today. In addition, we are looking toward the next generation of products. You may know that the European Union has passed an F-gas directive that will phase out the use of R-134A or HFC-134A in mobile air conditioning in new cars beginning in 2011. Over a year ago we announced that we had identified several candidate refrigerants that have only about 3 percent of the global warming potential of HCF-134A, and we are looking to apply that technology to other markets, as well. So we are optimistic as we go forward that we can provide continuously more sustainable solutions to meet the growing needs of the global refrigeration and air conditioning industry.

Mr. THORNTON. Well, EIA endorses the point of view that preference should be given to using cooling gases that have the lowest possible global warming potential. We don't want to have another transition chemical situation like HCFCs [sic] that has a lesser global warming potential compared to, say, HCFCs, but is still a significantly global warming potential when the chemical is mass produced, so we should be aiming for the lowest possible and then giving preference to encouraging those technologies.

Ms. MCCOLLUM. How difficult is it, if you have an older refrigeration unit? I know that recyclers are supposed to be on the watch, trying to not release these chemicals into the air. I know the automotive dealers were working very hard

with refrigeration units in the cars when the switch was made not to release the chemicals. Is there anything that industry can do better?

Mr. MCFARLAND. This is why we are proposing more reliance on market-based mechanisms that provide the financial incentives for all of the technicians throughout the value chain to prevent emissions into the atmosphere. Right now the data shows that, of the R-134A, HFC-134A, for example, that is used in automotive air conditioning and other refrigeration systems, of the amount that is contained out there in equipment, about 20 percent gets into the atmosphere every year, either through leaks, poor service practices, end of life.

The same is true for HCFC-22 that is used in air conditioning and refrigeration systems, for example, your home air conditioner and supermarkets. And you are dealing with literally tens of millions of potential sources out there and tens of thousands of technicians that are going out there to work on those systems.

What you need is a market-based system that provides a financial incentive for them to recover it, so it is more cost effective for them to recover it than it is to allow it to escape into the atmosphere, and to maintain it in the equipment. So that is the basis for our suggestions that moving forward the implementation of agreements to improve

environmental performance could be much more effective with market-based mechanisms rather than command and control systems that just say, Technicians, you cannot emit this into the atmosphere.

Chairman WAXMAN. Thank you very much, Ms. McCollum.

I want to thank the three of you very much for your presentation to us. I think this hearing has set a record that I think will be important for Congress as we consider the problems of the upper ozone, as well as the climate change matters. I hope this will also encourage the Administration to push forward at the September meeting even more aggressively than they already are proposing, but they are proposing some good ideas and we want to commend them for that.

Thank you very much. That concludes our business for today. We stand adjourned.

[Whereupon, at 11:30 a.m., the committee was adjourned.]

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